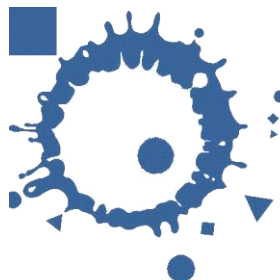


EM-DAT

30 YEARS EXPERIENCE IN DISASTER DATA COLLECTION

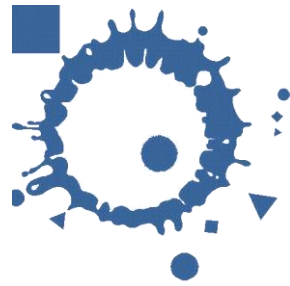
JRC, 7th EU Loss Data Workshop, Ispra, 10-11 March 2016

Regina Below



Centre for Research on the Epidemiology of Disasters

Humanitarian Crises

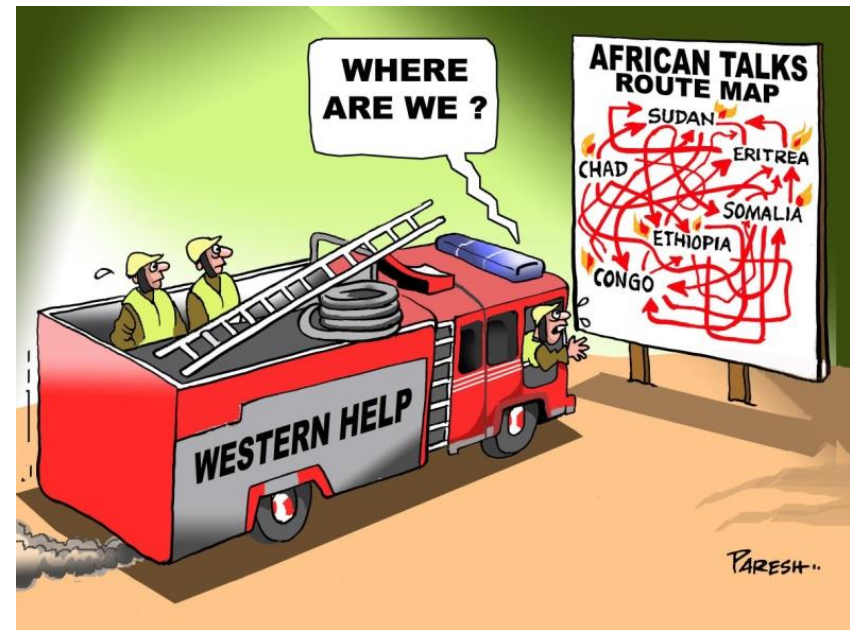


The role of Data Management in Emergency Situations
Acute phases in emergencies -> Chaos

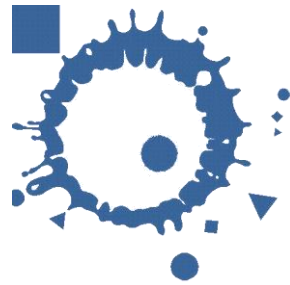
Great amount of data

but

Low quality data or
too much uncertainty



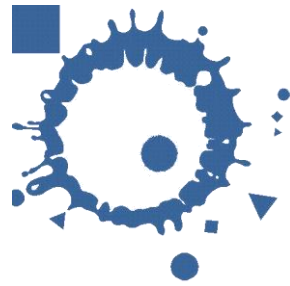
CRED's Database and information support



1. Build an evidence base
2. Address its reliability
3. Disseminate the data and provide analyses

Complex Emergencies (CE-DAT)
&
Natural Disasters (EM-DAT)

EM-DAT: State of Play



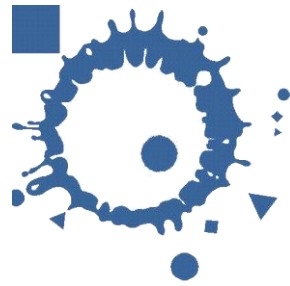
Strong need for data:

- Disaster events increasing in magnitude & frequency
- Continuous need for disaster data collection
- Important tool for a variety of institutions and organisations

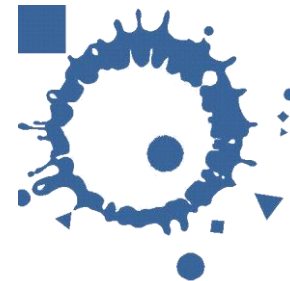
Problems:

- Lack of international consensus on best practice in collecting data
 - Variability in definitions, terminology, sources, etc.
-

EM-DAT: The International Disaster Database



- **1988: Creation of the EM-DAT Database; maintained by CRED, Université catholique de Louvain (Brussels)**
 - **Occurrence and impact of disasters (63% natural and 37% technological) : 22,000 records**
 - **1900 – today**
 - **Global Coverage/National Resolution (180 countries)**
 - **Inclusion criteria**
-

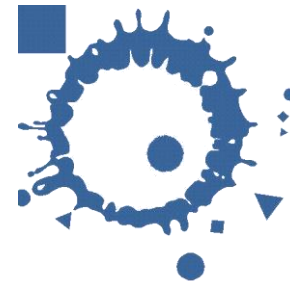


What is a natural disaster?

EM-DAT definition

*“A **situation or event**, which **overwhelms local capacity**, necessitating a request to national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering”*

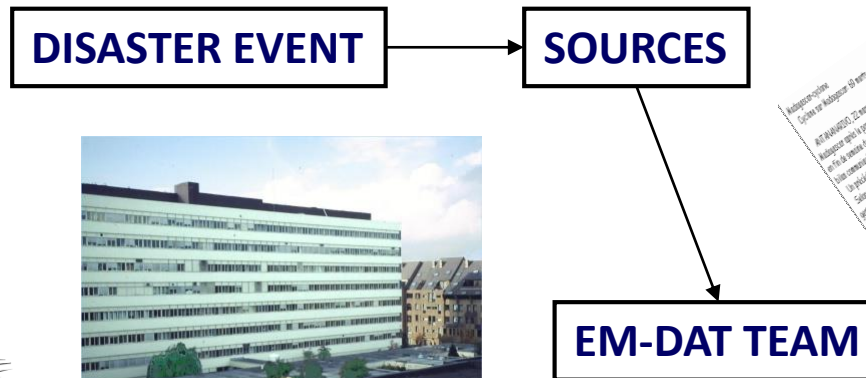
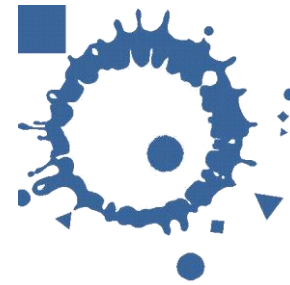
A **Natural Disaster** is a disaster caused by a natural hazard - as opposed to a man-made or **technological disaster**.



EM-DAT Inclusion Criteria

- **10 or more persons reported killed**
 - **100 or more persons reported affected**
 - **A call for international assistance**
 - **A declaration of emergency**
-

EM-DAT: Sources



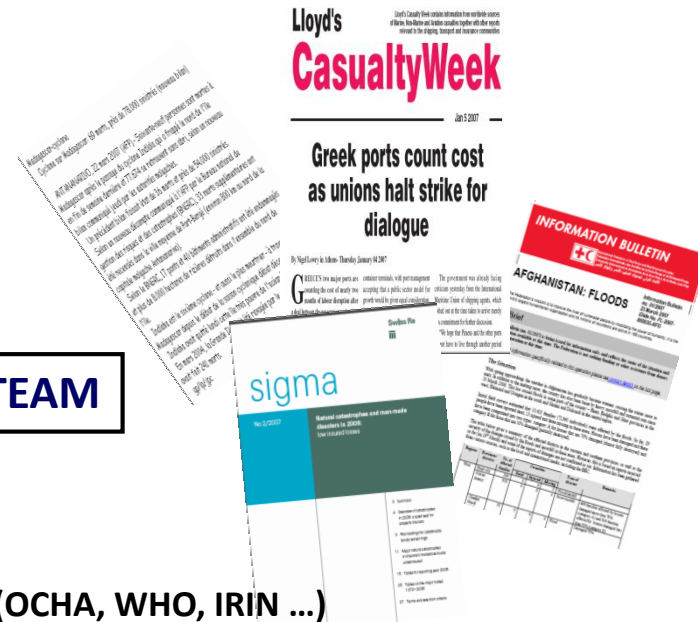
Database validated and updated daily

Compiled from various sources according to a priority list

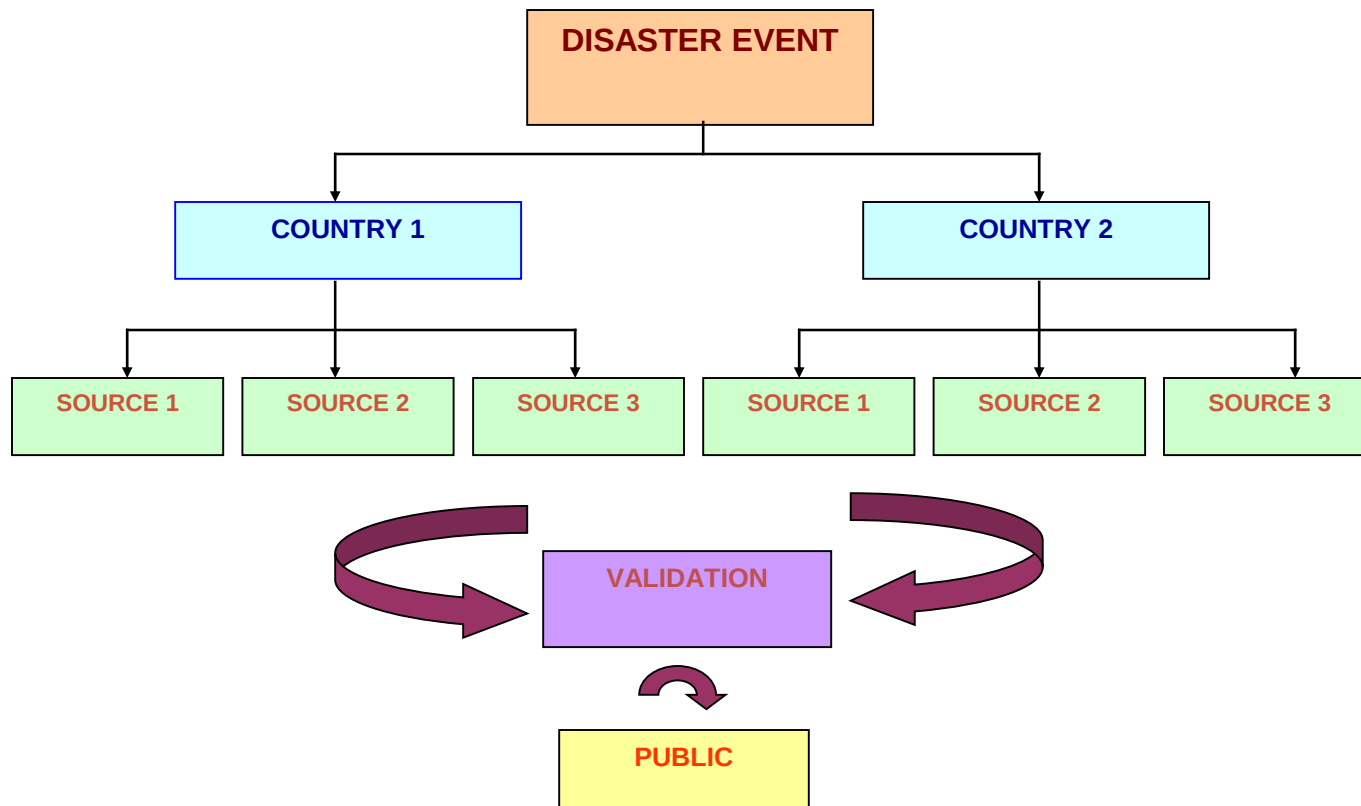
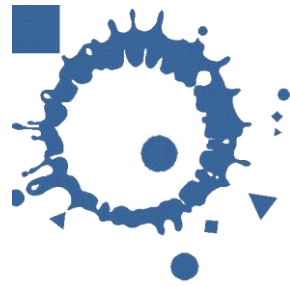


Main Sources:

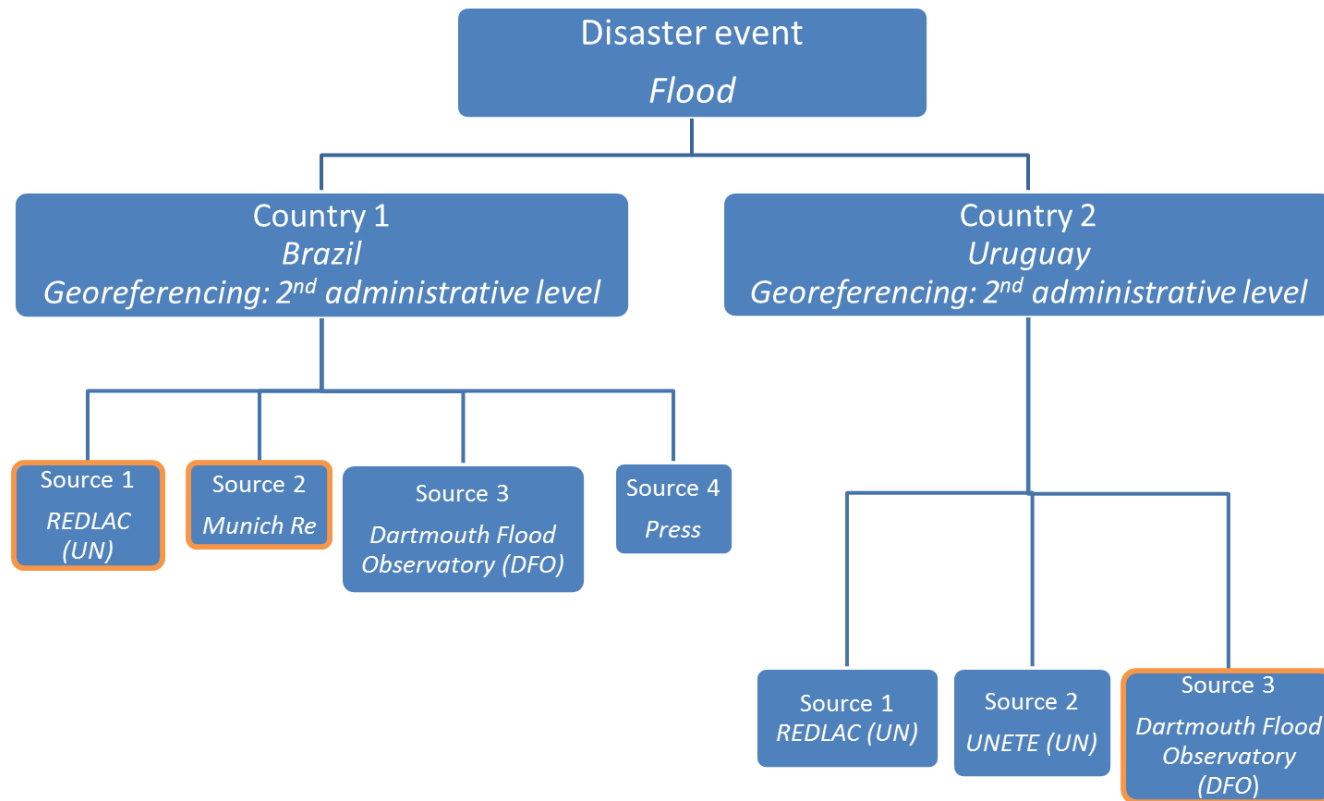
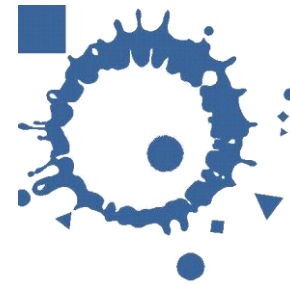
- United Nations (OCHA, WHO, IRIN ...)
- Governmental figures
- US Government (OFDA, NOAA, DFO, USGS, ...)
- IFRC and NGO's
- Re-insurance Companies (Swiss Re, MünichRe)
- Research Centres
- Press/Media
- + Specific disaster type source (USGS, DFO, etc ...)



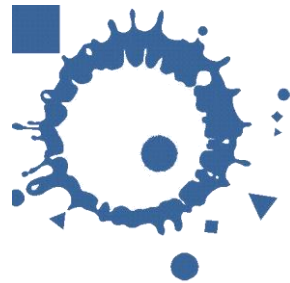
EM-DAT: Methodology



EM-DAT: Methodology (exemple)



EM-DAT: Data Fields (Level 1)



Disaster Information:

Disaster Number (Unique ID)

Disaster Group/Sub-Group

Disaster Type/Sub-type/Sub-sub type

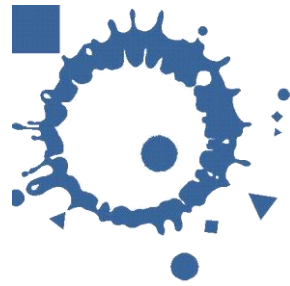
Entry Criteria

Event Name

Glide Number

DFO/GVP/USGS

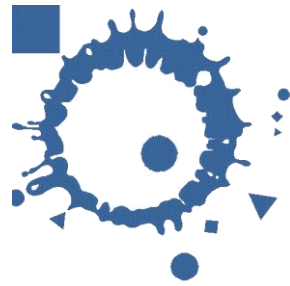
Classification of natural disasters



Classification used by CRED (IRDR Peril Classification and Hazard Glossary, 2014)

					
Geophysical	Hydrological	Meteorological	Climatological	Biological	Extra-terrestrial
Earthquake	Flood	Storm	Drought	Animal accident	Impact
Mass Movement (dry)	Landslide	Extreme temperature	Glacial lake outburst	Epidemic	Space weather
Volcanic activity	Wave action	Fog	Wildfire	Insect infestation	

EM-DAT: Data Fields (Level 2)



Temporal Information :

Start and End Data

Local time (EQ, VO)

Physical characteristics:

Origin, Associated Disasters (2); Magnitude and Scale

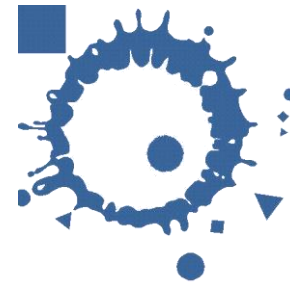
Status:

OFDA Response, Request for international assistance/Declaration
state of emergency + date; Aid contribution

Geographical information :

Country/Region/Continent; Location (text); River Basin (FL);
Latitude/Longitude (EQ, VO) + Geo-referencing tool

EM-DAT: Data Fields (3)



Source:

Source name/type; Reporting date; Source reliability score (1 to 5); Comments

Human Impact:

Deaths + Missing = Total deaths

Injured + Affected + Homeless = Total affected

Economic Impact:

Economic losses (direct/indirect/sectors

Reconstruction cost + Insured losses

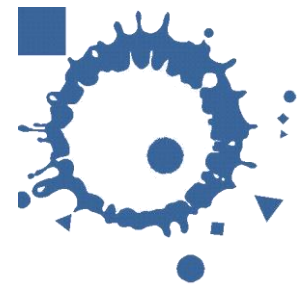
Infrastructure impact :

houses, bridges, commercial/business, road, rails, education, health, forest ,
farmland/crops damaged/destroyed

Sectors affected :

Animals, industry, transportation, communication, cultural infrastructure, water
supply/sanitation,

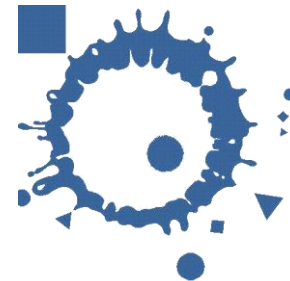
Documentation



Validation process

- **Monthly validation process before making data available to the public (every 3 months)**
 - **Internal cross error checking**
 - **Yearly quality data control**
 - **At least confirmed by two sources**
-

Validation exemple



✓ Sources Summary/Validation for the disaster: 2013 - 0433

Dis. Group/SubGroup/Type/Subtype/Subsubtype/Name: Natural/Meteorological/Storm/Tropical cyclone/-/Typhoon Haiyan (Yolanda)

Published disaster: ☒

Country Summaries Totals Summary

Viet Nam **Philippines** Palau China P Rep

Location notes: Samar, Leyte, Cebu, Iloilo, Capiz, Aklan and Palawan provinces

Start date - End date (d/m/y): 08/11/2013 - 08/11/2013

Human indicators (double click a value to select/unselect it)

Source	No. deaths	No. missing	Total deaths	No. injured	No. homeless	No. affected	Total affected	Reporting date
OCHA	7986	0	7986	0	0	14120000	14120000	
NDCC	6293	1061	7354	28689	0	16078181	16106870	
Selected Values	6293	1061	7354	28689	0	16078181	16106870	

Economic indicators (double click a value to select/unselect it)

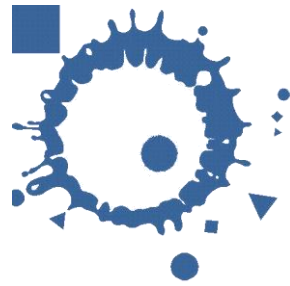
Source	Direct damage	Indirect damage	Total damage	Reconstruct. damage	Insured damage	Reporting date
OCHA	--	--	--	--	--	
NDCC	0	0	903237			
Selected Values	0	0	10000000	0	700000	

Infrastructure indicators (double click a value to select/unselect it)

Source	Houses		Bridges		Commercial		Roads		Rails		Education	
	Damaged	Destroyed	Damaged	Destroyed	Damaged	Destroyed	Damage	Destroyed	Damaged	Destroyed	Damaged	Destroyed
OCHA	1120000	490000										628
NDCC	589404	550928										
OFDA	1100000											
Selected Values	589404	550928	0	0	0	0	0	0	0	0	0	628

Close Save Print Summary

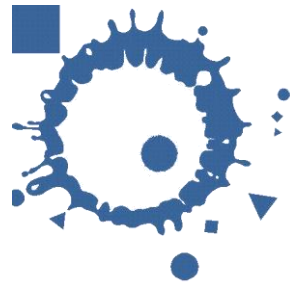
EM-DAT: The International Disaster Database



What makes EM-DAT unique?

- 30 years experience in disaster data collection and management
 - Standard methodology
 - Systematic validation to ensure data quality and reliability
 - Transparency of the sources
 - International recognition and CREDibility
 - Unique free accessible database
-

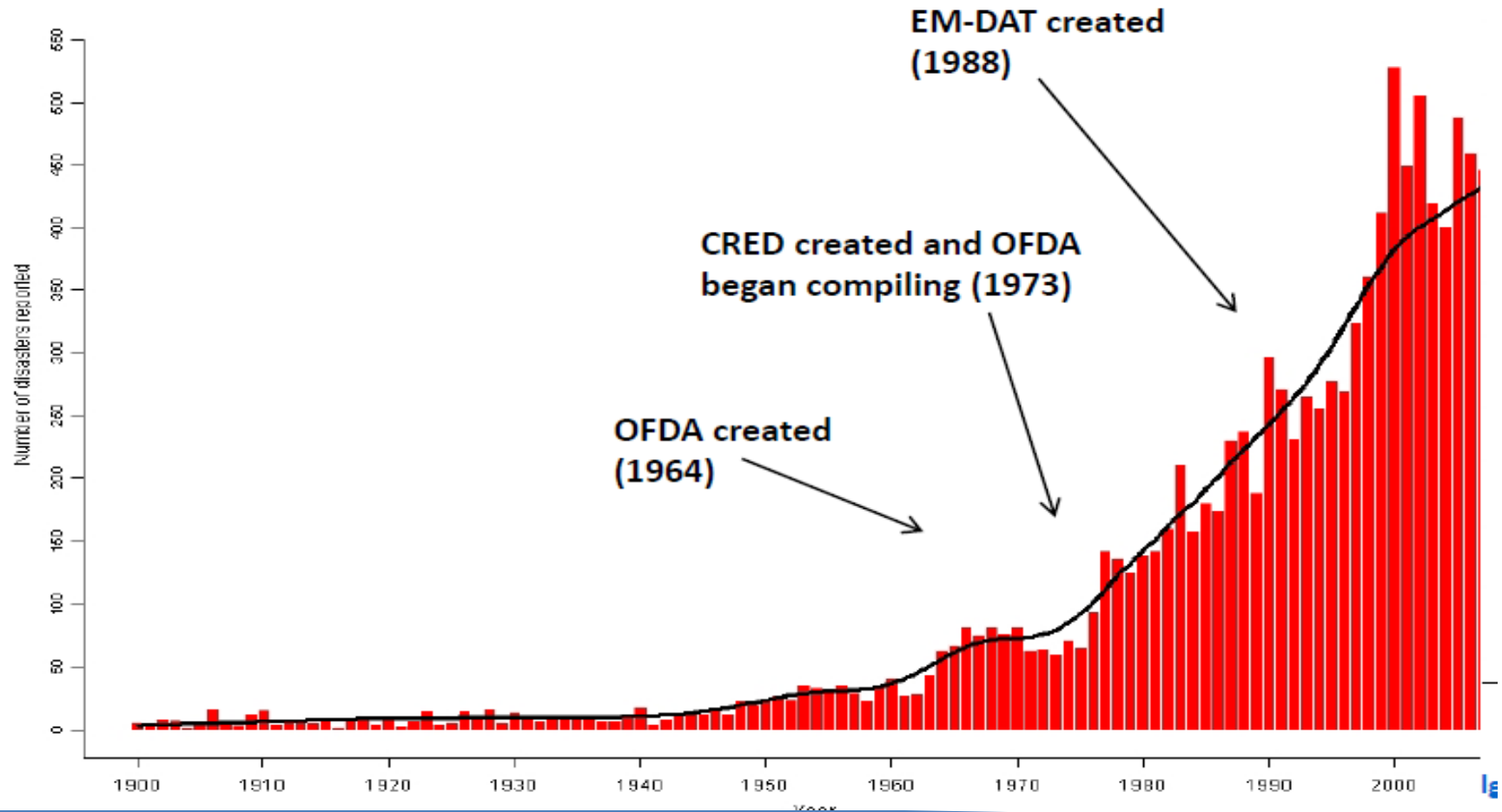
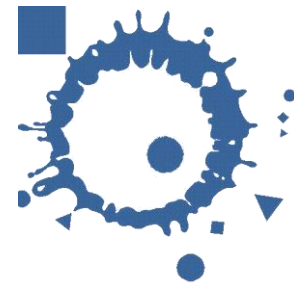
EM-DAT: The International Disaster Database

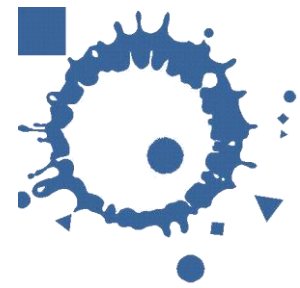


What are the limitations?

- Global database
 - Limited potential for analysis in terms of disaster occurrence and impact on smaller, intra-country spatial scales
 - Public aspect of EM-DAT may lead to inappropriate use of data
-

Number of Natural Disasters by year





Trends in Natural Disasters

Explanations for this increase

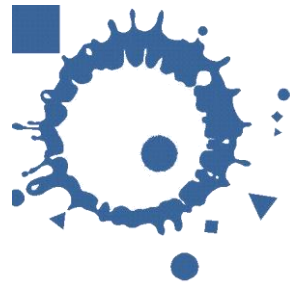
“False increase”:

- More natural disasters are reported.
- More media reports are captured and entered in DB; especially small events

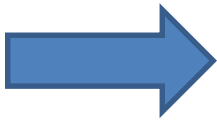
“Real increase”:

- Increased vulnerability
 - Real increase of **extreme** natural events
-

Evidence

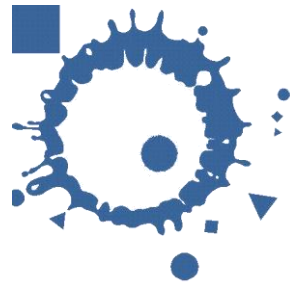


- Improvement of information since last 40 years
- Availability of statistical data



BETTER DATA QUALITY

Methodology : Evidence

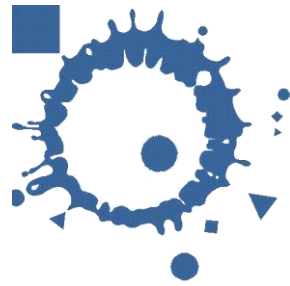


- 1) Lack of international consensus on best practice of data collection



Quality of a database can only be as good as the reporting system

Methodology : Evidence



2) Inconsistencies, data gaps and ambiguity of terminology

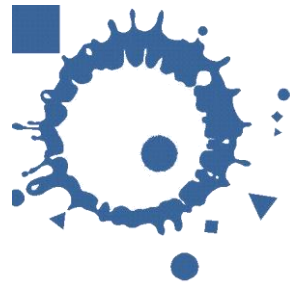


Comparison and use of different data sets difficult



Difficulties in evaluation disaster situation and obstacles for prevention planning and preparedness

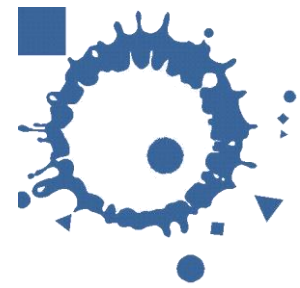
Methodology : Evidence



3) Local sources are better reflecting the local picture



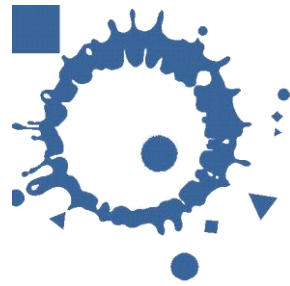
Desaggregated data



What are the key problems?

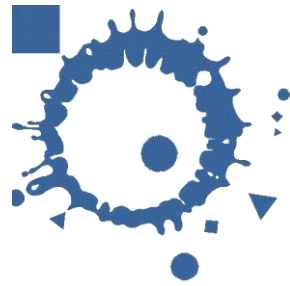
- 1) Intent behind reporting data
 - 2) Dates reported
 - 3) Definition
 - 4) Methods of evaluating damages
 - 5) Geographical location
-

1) Intent behind reporting data



- Information not gathered for statistical purposes
 - Availability of humanitarian assistance
 - Fragmented jurisdiction over different type of disasters influence availability and accuracy of data
-

2) Dates reported

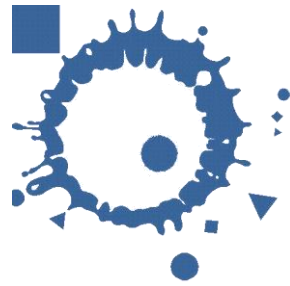


- Source of ambiguity (sudden vs long-term disasters)

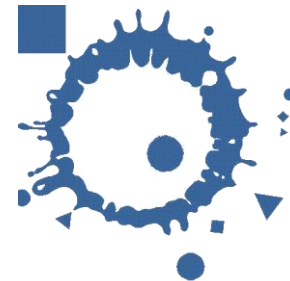
3) Definition

- Affected: definition open to different interpretation
- Exaggeration to maximize sympathy or humanitarian aid
- Assumption being made

4) Methods of evaluating damages



- Poor frequency in reporting
 - Insurance penetration
 - No internationally accepted methods (except ECLAC)
-

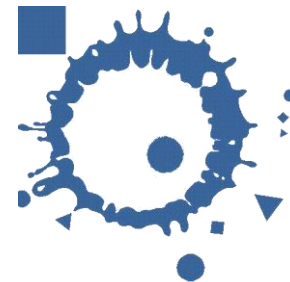


5) Geographical location

- Higher probability in large country (USA, China, India)
 - Changes in national boundaries (i.e. Soviet Union, former Republic of Yugoslavia)
-

NATURAL DISASTERS IN THE EU COUNTRIES (EM-DAT)

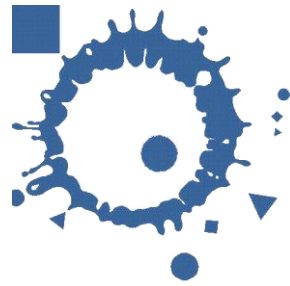
1900 to 2015



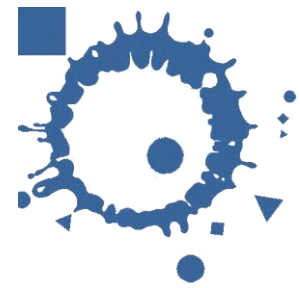
Countries	# Nat.Dis	Countries	# Nat.Dis	Countries	# Nat.Dis	Countries	# Nat.Dis
Austria	47	Estonia	3	Italy	136	Portugal + Azores	39 + 6
Belgium	62	Finland	3	Latvia	8	Romania	94
Bulgaria	47	France	151	Lithuania	12	Slovakia	19
Croatia	24	Germany	93	Luxembourg	11	Slovenia	9
Cyprus	14	Greece	83	Malta	na	Spain + Canary Isl.	84 + 7
Czech Rep	24	Hungary	31	Netherlands	34	Sweden	14
Denmark	16	Ireland	23	Poland	47	United Kingdom	87

ANALYSIS AND RESULTS

(15 countries)



- No database or in process (4)
 - Coverage
 - Language
 - Navigation and accessibility
 - Platform/disaster information vs Database
 - Disaggregated data
-



EM-DAT: THE NEXT STEPS

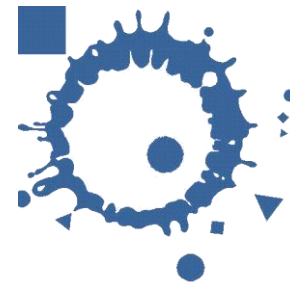
(1) Maintenance of the database, visibility and usability

Maintenance of the EM-DAT database and further development of the website; EM-DAT usability; Long-term agreement with specialized institutions

(2) Development and implementation of a mapping and query interface for geo-referenced EM-DAT data

(3) Improving disaster data collection at national and regional level

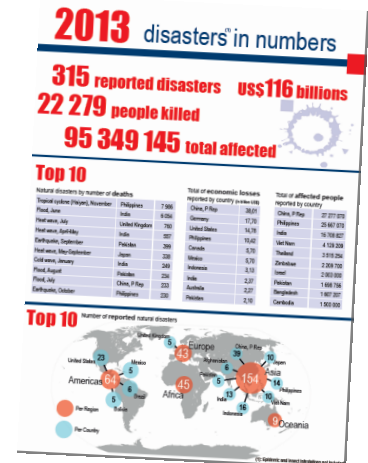
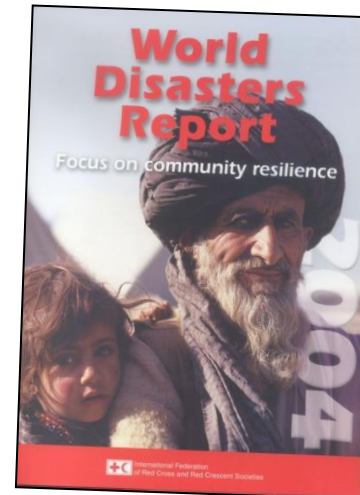
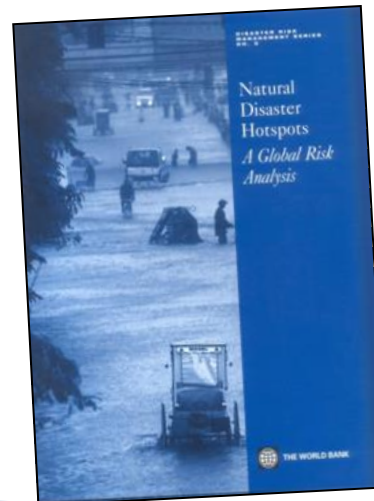
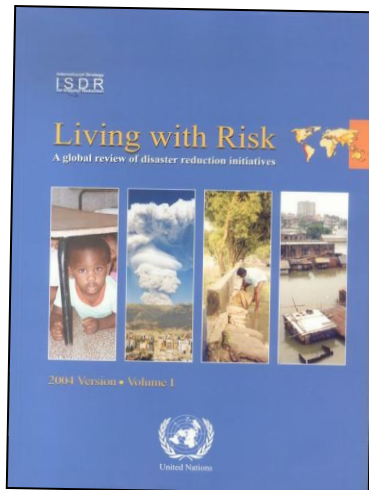
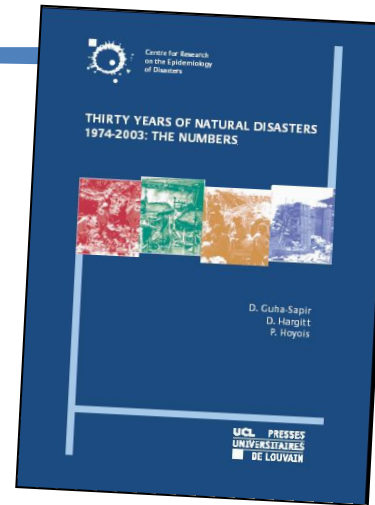
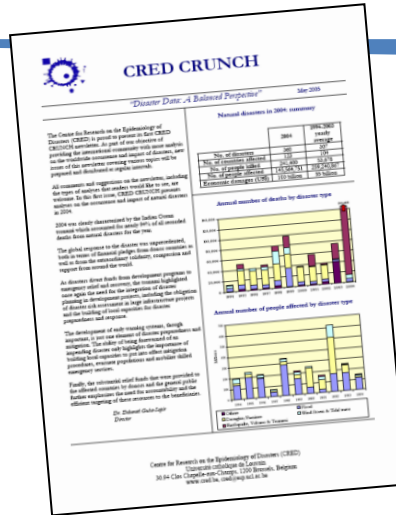
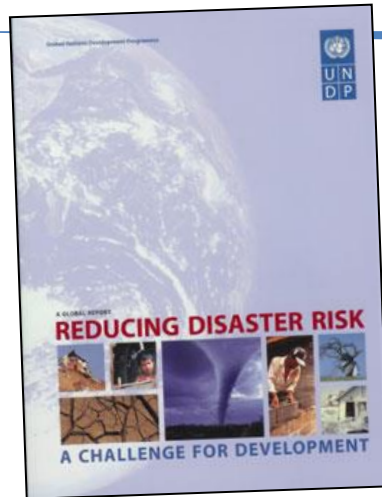
=> Undertake detailed case studies of disaster data collection process; Conduct regional workshops and training; Undertake data use demonstration stud(ies) with national partners



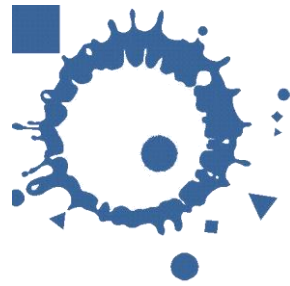
Thank you

www.emdat.be

EM-DAT Applications

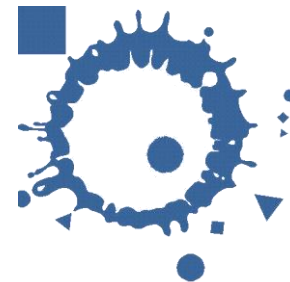


EM-DAT on line



Options to consult the EM-DAT database	
Advanced Search	Create your dataset
Country Profile	Disasters by Country
Disaster List	Generate Events list
Disaster Profiles	Summary of Events
Disaster Trends	Interactive Graphs
Reference Maps	Pre-made maps

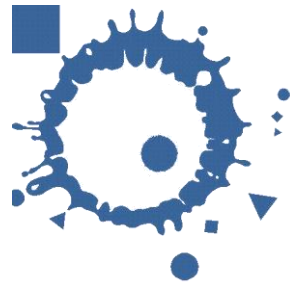
www.emdat.be



Who are the EM-DAT users?

- National ministries and specialized agencies
 - International agencies and NGOs
 - Consultant firms and private companies
 - Academic, researchers and students
 - Research institutions (environment, geography, tourism, etc ...)
-

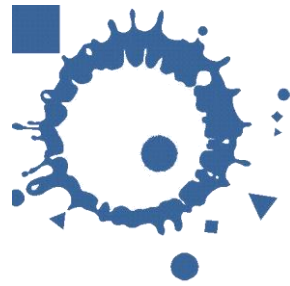
GEO-REFERENCING EM-DAT



Objectives

- Locate areas at highest risk
 - First step in risk vulnerability analysis
-

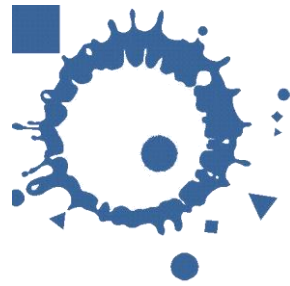
GEO-REFERENCING EM-DAT



Methodology

- Standard methodology protocol
 - Convert the text format location => Admin 2 level code
 - GAUL dataset (FAO) : open access and downloadable (tables and shapefiles)
 - All natural disasters from 2000 – onwards (5500 records)
-

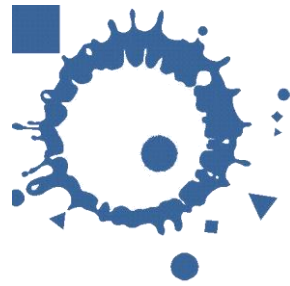
GEO-REFERENCING EM-DAT



Common problems

- Similarities between district and province names
 - Vague location = > assumptions
 - Precision improved by “Geosetter” or looking back to archives
-

GEO-REFERENCING EM-DAT



Advantages

- Tools used are free and open access
 - Can be shared and merged with other databases
 - Use at global scale (EM-DAT covers the world) – create a system that can be used by everyone
-